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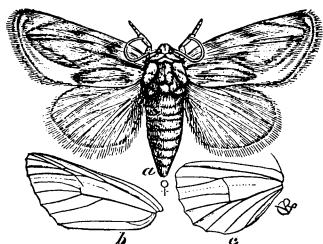
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—Professor Sorokine, of the University of Kazan, Russia, has begun the publication of a monograph of the Chytridiaceæ, in the *Archives Botanique du Nord de la France*. It promises to be of great value. Each species is illustrated by wood cuts in the text.

#### ENTOMOLOGY.<sup>1</sup>

A UNIQUE AND BEAUTIFUL NOCTUID.—The accompanying figure represents one of the most striking and unique of our N. A.



*Cirrophanus triangulifer* Grt. a, male; b, c, venation of front and hind wings (after Riley).

Noctuids in respect of color and pterogostic design, the general color being of a bright golden-yellow, and the lines and shades of a deeper gold, inclining to ferruginous or even ochreous.

Many years ago we had in our collection a single male specimen of this moth which was captured in August on hickory at Kirkwood, Mo. In 1871 we submitted it to a number of lepidopterists both in this country and in Europe, when, finding that it was unknown and could not well be referred to any defined genus, we gave it a MS. name, hoping some day to obtain the female. In the summer of 1872 Mr. A. R. Grote visited St. Louis during our absence, and was courteously granted permission by an assistant to go over our collection. He made various notes thereon, and among others took a hasty description of this unique moth. This description was at once published in the *Canadian Entomologist* (iv, Oct., 1872, p. 187) under the name of *Cirrhophanus triangulifer*, nov. gen. et sp., and, like all generic descriptions dashed off under such conditions, and without real study, was quite imperfect, all important structural details being omitted, and some of the characters given belonging to the male only. The description was accompanied by a statement of forgetfulness as to the source of the type, which, considering the fact that we were pretty well known to Mr. Grote at the time, and that our collection was the only general collection of insects in St. Louis, may be taken, perhaps, as illustrative of the effects of the "new infidelity" which he has preached.

The moth was redescribed in June, 1875, by Mr. H. K. Morrison as *Chariclea pretiosa* (Proc. Bost. Soc. Nat. Hist. xviii, p. 122), while Mr. Grote amplified his own description in October of the same year (Proc. Ac. Nat. Sc. Phil. 1875, p. 421). It is, however, to the affinities of the species that we wish to direct attention. Grote at first allied it with *Gortyna*, leaving a wide

<sup>1</sup> This department is edited by Professor C. V. RILEY, Washington, D. C., to whom communications, books for notice, etc. should be sent.

margin, however, by making it resemble *Halesidota* (Bombycidae) in size and outline, his opinion being necessarily superficial. In his Check List, published in 1875, he places it near *Nonagria* and *Scoleocampa* (Nonagriinae), while in his new List (1882) it is referred to *Chariclea* (Kirby), and placed near *Pyrrhia* (Heliothinae). In the Brooklyn list the former position is retained. In our opinion its affinities are clearly with the *Pulsiinae* and *Stiriinae*, and more remotely with the *Heliothinae*. It plainly shows its relations with *Basilodes* and *Stiria*, both in coloration, markings, thoracic vestiture, frontal protuberance, compressed and exsertile ovipositor, wing-venation and tibial armature, the form of wing having less classificatory importance. It might therefore, with propriety, be placed in the *Stiriinae*, a sub-family which has not been very clearly defined, and in which Mr. Grote would bring together several striking and aberrant forms.<sup>1</sup> The small and interesting *Xanthothrix neumögenii* H. Edw., has not only a suggestive resemblance in color and marking, but real relationship in the character of the frontal protuberance, tibial claw and exsertile ovipositor. *Nonagria* has a quite different frontal projection, while *Chariclea*<sup>2</sup> Kirby, as defined by Lederer, has different clypeal and thoracic characteristics, and a stronger tongue, the European *delphinii* being the only species having the front tibial claw.<sup>3</sup> Since the capture of our first male we have obtained other specimens from Missouri and Kansas, among them two females, and the following generic characters will assist lepidopterists in properly placing it:

Form robust. Head small; antennae with the basal joint scaled; eyes naked, full, globose; palpi short and slender with joints 1 and 2 subequal in length; 3 one-third as long as 2; tongue feeble; clypeus (♀) with a central transversely oval projection ending in a brown corneous mouth or excavation, the lips being sharp, arched dorsally, straight ventrally where a cylindrical, black tubercle projects yet somewhat further; an inferior, curved, sharp, clypeal carina; in the ♂ the protuberance, its excavation and the emargination are feebler. Thorax tufted with hairs and scales somewhat as in *Stiria*; the principal tufts being a broad pair behind collar, a longer and erect pair between patagia which are also raised, thick and tuft-like; front tibiae with a single, superior, terminal claw extending rather more than half their length in ♀, less pronounced in ♂; primaries broad, with apices well rounded, but with some variation in this respect; Venation as in *Stiria*, *i. e.* normal. Ovipositor horny compressed from sides, simple and exsertile.<sup>4</sup>

Structure is a very safe guide to habit, and we may conclude that the *Stiriinae* with their horny, exsertile and specialized ovi-

<sup>1</sup> *Papilio*, III, p 32.

<sup>2</sup> We know nothing of *Chariclea* Stephens whom Staudinger gives as authority for the genus.

<sup>3</sup> Mr. Smith has well characterized *Chariclea* in his recent Synopsis of the *Heliothinae* referred to last month.

<sup>4</sup> Since this was written Mr. Grote has published his latest views on the *Stiriinae* (*Can. Ent.* xv, pp. 72-77), justifying our views as above expressed, by reestablishing *Cirrhophanus*, and placing it in the *Stiriinae*. He defines *Cirrhophanus* for the fourth time, but still inaccurately by omitting the front tibial claw, and the exsertile ovipositor. The ovipositor may not always be exserted, but it is, as in *Basilodes*, *Stiria*, and *Stibadium* exsertile, and often remains exserted in the dried specimen.

positors are endophytes—a conclusion strengthened by their tendency to grease, and explaining perhaps our ignorance thus far of their larvæ. There would also seem to be some correlation between this puncturing and thrusting ovipositor and the produced and specialized clypeus, and perhaps also with the large claw on front tibiæ; for these characters are most pronounced in the female, and doubtless bear upon habit.—*C. V. Riley.*

INSECTS AFFECTING STORED RICE.—In a lot of damaged rice from the Chinese Centennial exhibit recently submitted to us by the director of the National Museum, we found the following insects: Numerous larvæ of *Tenebrio molitor*; larvæ of *Tenebrio obscurus*, somewhat less numerous than the former; also a few imagos of the same species; numerous larvæ, pupæ and imagos of *Murmidius ovalis*; several larvæ and imagos of *Trogosita mauritanica*; numerous dead specimens of *Calandra oryzeæ*; a few specimens of *Silvanus surinamensis*; a few larvæ of *Attagenus megatoma*; numerous larvæ of what appears to be *Ephestia zea*; a few specimens of *Lepisma saccharina*. The larvæ of *Trogosita mauritanica* are known to prey upon other soft-bodied insects, while those of *Attagenus megatoma* live also chiefly upon dried animal matter. The remaining species found in the rice are known to feed upon stored produce, and are of no special interest except the *Murmidius ovalis*, which is not often found in large numbers, and whose earlier states have hitherto remained unknown.

HYPERMETAMORPHOSES OF THE MELOIDÆ.—In treating of the transformations of the blister-beetles (*vide* AM. NAT., XII, p. 286, *ff*) we endeavored to conform to the existing nomenclature in characterizing the different forms which the larva presents, and employed the following terms:

- 1st larva    *Triungulin* (from the egg).  
 2d larva    { *Caraboid* stage (after first molt).  
               { *Scarabæoid* stage (after second molt).  
               { *Ultimate* stage (after third molt).  
                   *Coarctate* larva (after fourth molt).  
 3d larva    *Third* larva (after fifth molt).

We are satisfied that this attempt to combine the more recent facts with previous views tends to confuse, and that the nomenclature may be simplified and made more consonant with the facts. We would propose, therefore, the following arrangement:

- Triungulin*    = first larval stage.  
*Caraboid*     = second larval stage.  
*Scarabæoid*   = third and fourth larval stages.  
*Coarctate*    = fifth larval stage.  
*Scolytoid*    = sixth larval stage.

This nomenclature fully represents the facts, there being five distinct forms of larva, the difference in the third and fourth stages

being but slight and not suggesting any other than a scarabæoid larva. These five forms of larva will be found in all Meloids so far traced in their earlier states, whether exuviation is but partial and imperfect as in *Sitaris*, *Meloë*, *Hornia*, etc., or whether it is more perfect as in *Epicauta*, *Macrobasis*, etc.—*C. V. Riley*.

COLOR PREFERENCES IN NOCTURNAL LEPIDOPTERA.—For two seasons past (1881 and 1882) I have made fruitless attempts to reach some definite conclusions as to the relative importance of a few primary colors as attracting signals to night-flying insects. I do not know whether the plan adopted is original or not, and as it may yield some useful or interesting results in the hands of others I briefly describe it. I made four or five sleeves, or cylinders open at both ends, of variously colored tissue papers, and drew them over common kerosene lamps with glass chimneys, the familiar illuminating agent of all country homes, thus improving a very serviceable and inexpensive Chinese lantern. The advantage of this arrangement consists in the ease with which the colored sleeves can be changed, any combination of colors being secured without removing the lights, and so a uniformity of light power maintained at the several stations and for the several colors during one experiment. The method also permits a very easy adjustment of lights in their intensity, by raising or lowering the wicks, and thus allows the observer to test strength of mere illumination against attractiveness of color as a hue for the insects. The planting of the lights seems important. I started by placing them in a row at long distances from each other. The defect of this arrangement appeared to be that the brilliancy of the first light, encountered by the insects coming upon it from its side or portion of the row, interfered with the visitor's freedom of choice as between that color and another when the light from the others reached it in a dim and imperfect manner. The lanterns were then arranged in a square (four colors) whose dimensions were determined by the intensity of the several lights. The distance between the lanterns was such as to allow the limital circle of illumination of each at first to touch, and subsequently to intersect those of its neighbors. This distance was reduced until the separation between the lanterns was less than the radius of the circles of light which each threw around itself, the lights being of equal intensity. This proved unsatisfactory, and having devised no means of exhibiting a number of colored lights so that the chances were equalized completely for insects coming from all sides, to choose according to any constitutional preference for one color over another I used only two colors at a time. The arrangement might be found useful to place four lanterns in two pairs, each pair of one color, and in a diamond pattern so that each color appears equally prominent, no matter from what side the dazzled insect may approach the group. The apparent necessity for allowing the insect

to choose instantly between the colors before it reaches either arises from the infatuation produced in the insects by the light, which once reached seems to obliterate all capability in the creature to free itself from its enticement, except in an irregular and accidental manner. My experiments proved nothing except the absence of any marked preferences for certain colors over others, and the almost invariably greater charm exerted by the white lantern, which, on account of their translucency, appeared more brilliant than the colored lamps.—*L. P. Gratacap, New York.*

ENTOMOLOGICAL NOTES.—The British "Council of Education" has established a committee of economic entomology, and among other able members appointed are Professor Huxley, Professor Westwood, Professor Wrightson (president of Downton College of Agriculture), Professor Dyer (sub-director Kew Gardens), and Miss Ormerod.—Dr. R. P. Hoy has published a list of the cold-blooded vertebrates and Lepidoptera of Wisconsin. The Micros are not included in the latter, but the Macros are very well represented, and forty-seven species of *Catocala* are recorded as taken within two miles of Racine.—Professor C. H. Fernald informs us that he has secured the collection of Pterophoridae of Mr. Charles Fish, who has been obliged to abandon their study, and that he has also secured all of Fitch's material in the same family. We always experience a profound pleasure when a careful, conscientious and competent student takes hold of any given family with a view of eventually monographing or synopsising it.—The report of the Entomological Society of Ontario, for the year 1882, is just at hand. The society is in a flourishing condition, and we are glad to learn that there is to be a general index to all the previous reports. There is a want of system in the matter of these reports resulting in much repetition of matter, while the use of the same cuts year after year becomes somewhat tedious.—Mr. George D. Hulst has an article on some Sesiidae in the May number of the Bull, Brooklyn Ent. Soc. (Vol. vi, pp. 8-10), giving accounts of *Bembecia marginata*, *Sesia acerni*, and *Mellitita cucurbitæ*,—three species of economic interest. He falls into a singular error in quoting from our Sixth Mo. Ent. Rep. the account of the oviposition of *Oberea perspicillata*, and mistaking it for that of the *Bembecia*, which, as he shows, oviposits on the leaf. He found that the eggs fell with the leaves to the ground, and did not hatch before winter. Experience in the latitude of St. Louis indicates on the contrary that they do hatch in the fall, as stated in our report above cited, though doubtless there is variation in this respect.—In a synopsis of the genus *Limenitis* (*ibid.*, pp. 5-7) Mr. J. B. Smith recognizes but four species, *missippus*, *ursula*, *weidemeyerii*, and *lorquini*, sinking some ten of the late finely-split species of Edwards (W. H.) and Strecker, as varieties. In this we think he has done wisely, though many will question whether *arthemis* Drury, which is made a variety of

*ursula*, should not be considered a sufficiently good species.—The entomological papers from the transactions of the Iowa State Horticultural Society, for the year 1882, have been published separately for gratuitous circulation, and contain much information of practical value from Hon. J. N. Dixon, Miss Alice B. Walton, and Professor Herbert Osborn.—The monthly meetings of the Brooklyn Entomological Society will hereafter be held on the last Saturday of each month in Wright's business college, corner of Broadway and Fourth Streets.—The Stettiner Entomologische Zeitung, Vol. 44, 1883, Nos. 7-9, contains beside others of less general interest the following papers: Dr. H. A. Hagen's contributions to a monograph of the Psocidæ (continued); Remarks upon the influence of change of food upon morphological varieties, especially in the species of the genus *Eupithecia*, by Dr. A. Speyer; H. B. Möschler's notice of Fernald's catalogue of N. A. Tortricidæ; and Dr. C. A. Dohrn's list of Zeller's entomological papers, published after the appearance of Hagen's Bibliotheca.—At the fiftieth anniversary meeting of the London Entomological Society, held May 2d of this year, Professor J. O. Westwood was elected by acclamation titular life-president of the society.

#### ZOÖLOGY.

THE SEA PENS OR PENNATULIDA.<sup>1</sup>—Professor Milnes Marshall and Mr. W. P. Marshall give an important and interesting account of the Pennatulida collected in the Oban Dredging Excursion of the Birmingham Natural History and Microscopical Society. *Funiculina quadrangularis*, *Pennatula phosphorea* and *Virgularia mirabilis* were the three forms collected.

The very primitive nature of the first of these is indicated by the irregular arrangement of the polyps, their independent insertion into the rachis, and in the comparatively slight difference between the polyps and the zooids, as well as by the shortness of the stalk, or part of the colony devoid of polyps. In *Pennatula* we have the polyps fused into leaves, and there is a considerable difference in the size of their constituent parts, as well as great anatomical differences between the polyps and the zooids; the stalk is also relatively much longer.

*Virgularia* is shown to be the most modified by the restriction of the reproductive organs to imperfectly developed polyps, and, in addition to these points, by the presence of the so-called radial vessels which are absent from the other two forms.

A very curious discovery has been made with regard to *Virgularia*; with but one exception all the known specimens of *Virgularia* are mutilated, the lower end being generally, and the upper always wanting; as a hypothesis, the author some time ago suggested that the tips were probably bitten off by some marine ani-

<sup>1</sup> 8vo, Birmingham, 1883, pp. 81 (4 pls.).